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ABSTRACT

Crime problems in rapidly growing communities have been viewed from a number of different theoretical perspectives. This paper offers a structural analysis that focuses on the density of acquaintanceship. When a small and stable rural community suddenly experiences rapid growth, one of the expected consequences can be a significant decline in the community's density of acquaintanceship, i.e., the proportion of community members who are personally acquainted with one another. Variables that affect density of acquaintanceship include community population, length of residence, anticipated length of residence, diversity, and segregation. From the structural perspective, evidence of disruption should be visible in three areas of social functioning: socialization of the young, caring for a community's weaker members, and the control of deviance. Examination of existing studies shows that in 20 of 22 comparisons between changes in population and changes in crimes or arrests, the annual percentage increase in crimes was clearly greater than the average annual percentage increase in population. On average, crimes rise three to four times as rapidly as population, depending on the analytical approach used. The paper suggests the importance of performing similar analyses in other areas, and suggests that a structural perspective that focuses on a community's density of acquaintanceship can offer a superior explanation of the available data on rapid community growth. (DHP)

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DEVIANT BEHAVIOR AND RAPID COMMUNITY GROWTH: EXAMINING THE EVIDENCE[1]

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Abstract

One of the most contentious questions in the literature on community change has to do with the social problems that are or are not created by rapid community growth. The literature on the topic has evolved through a series of cycles, but many controversies in the area remain active ones. One of the reasons may have been the tendency to view both the "benefits" and "disruptions" of growth in relatively undifferentiated terms. Another may be that the cycles correspond roughly with trends in the use of global theoretical perspectives, although most such usage is vague and implicit. This paper makes a case for an emphasis on theories of the middle range and on greater disaggregation and specificity in hypotheses, arguing that greater precision could help to settle some of the controversies that have arisen in the past. This logic is applied to an area of potential social problems that has been the focus of particular dispute in past studies--crime and deviant behavior. Although "real" empirical outcomes may have varied to an extent, the differing findings of previous studies appear to have been due in part to methodological factors. The three studies using aggregated data from a large number of counties have encountered mixed results; the three studies using survey data on criminal victimization appear to have found high victimization in rapidly growing communities; and the vast majority of case studies of specific rapid-growth communities have found significantly increased victimization. Despite the many methodological differences among the case studies, moreover, their results display a surprising consistency, as shown by a series of regression analyses that explain between 85%-98% of the statistical variance in the accumulated case study findings, despite the many differences that are in evidence. The overall conclusion is that, on average, crimes rise three to four times as rapidly as population, depending on the analytical approach being used, but that in any case it is necessary to reject the hypothesis that crimes rise only as rapidly as populations. The paper notes the importance of performing similar analyses in other areas and suggests that a structural perspective, focusing on a community's density of acquaintanceship, can offer an explanation for the accumulated findings that is superior to the relatively undifferentiated perspectives that are predominant in past work.

DEVIANT BEHAVIOR AND RAPID COMMUNITY GROWTH

In recent years, one of the most controversial questions in the study of community change has had to do with the social problems that are or are not created by rapid community growth. The rapid-growth phenomenon offers a convenient microcosm for applying some of the grand theories of the social sciences, but this paper will argue that the very grandness of the theoretical perspectives--including, in this case, their lack of predictive specificity--actually may have contributed significantly to the lack of resolution in the ongoing controversy.

A general adherence to classic economic thought has led some researchers to conclude that community growth, including rapid growth, should be generally beneficial for a community, while a general adherence to classic sociological thought has led others to conclude that rapid growth should generally lead to significant social problems. When viewed from the perspective of more than a decade of debate, unfortunately, while the area shows shifting trends in the ascendancy of one perspective over the other, its scientific cumulation that has been less than optimal. In short, it is possible that progress has been limited by the tendency to view growth as being either "all good" or "all bad."

Significant progress has been made in the past several years, however, by attempts to disaggregate findings across differing social groups. This paper takes the perspective that it may prove necessary to disaggregate across differing social processes, as well. This point will be illustrated with respect to criminal behavior, an area of potential social problems where available perspectives point to differing expectations. On the basis of a comprehensive reanalysis of the available evidence, rapid growth does appear to be associated with disproportionate increases in criminal activities; on the basis of the accumulated findings, this increase appears to be most effectively explained not by classic sociological thought, but by a newer, structural perspective that offers greater predictive specificity.

The paper is divided into three main sections. The first provides a brief overview of the existing literature on crime problems in rapidly growing communities, noting the implicit theoretical rationales that have been indicated for research findings in the past. The second section examines the theoretical perspectives in greater detail and suggests an alternative perspective that appears to have greater promise for explaining the somewhat contradictory findings that have been reported. The third section provides a much more detailed summary of the empirical findings of the existing studies, discussing these findings in the context of the theoretical perspective developed here. The overall thrust of the paper is that the time has come for a more balanced, comprehensive and scientific approach to the study of rapid community growth than has sometimes been in evidence in the past.

PREVIOUS WORK AND PRESENT OUTLOOK

The literature on the impacts of rapid community growth has evolved through a series of stages. Three, in particular, can be identified, and they will be sketched out briefly here (see also Freudenburg, 1986a; Seyfrit, 1986).

(1) Economic Opportunities. While it appears to have become common to refer to the "early" literature on rapid community growth as emphasizing the negative implications of growth, an actual examination of the literature shows this not to have been the case. In fact, with relatively few exceptions (e.g. Smith et al. 1971), both the policy-making documents and the technical reports that appeared before approximately 1975 showed a marked disinclination to refer to any but the positive implications of growth. Based on what remains the best and most extensive review of this early work, Summers et al. (1976:1) noted that in this literature, the community growth resulting from rural industrialization was generally seen as beneficial, providing "an important tool for solving the twin problems of rural poverty and urban crisis." Similarly, in reviewing federal

impact statements produced up to that time, Friesema and Culhane (1976:343) noted, "The statements generally consider only one social consequence--the economic impact of the project" (see also the critical reviews provided by Little, 1975; Freudenburg 1976). To the extent to which a theoretical perspective can be discerned or inferred in these early works, it is one that tends to ignore potential social problems and to draw on classic economic thought, emphasizing the advantages of an expanded economic base--a point that will be examined in greater detail below. The net result is that, consistent with the broader cultural disinclination to question the advantages of growth before the early 1970s (Dunlap, 1980), what will here be called the "early" or rural industrialization studies tended to focus on expected benefits of development while devoting relatively little attention to potential drawbacks (see also the discussion in Schnaiberg, 1980).

(2) Boomtown Disruptions. Beginning in roughly the middle 1970s, particularly after the 1973-74 oil embargo and the subsequent development of massive projects in sparsely populated regions of the western U.S. and Canada, researchers began to draw increasing attention to social problems associated with rapid community growth. If earlier studies had drawn directly on classic economic logic, the literature in this second and shorter-lived tradition tended to draw more directly from classic sociological writings, particularly those of Durkheim and Toennies. According to the major reviews of the research performed during this second era (Cortese, 1982; Freudenburg, 1982a; Wilkinson et al., 1982), emphasis tended to be placed on the disruptive consequences of rapid social change in what previously had been relatively stable systems, particularly in the so-called "energy boomtowns." In retrospect, some of the literature produced during this era appears to have represented in part an overreaction against the excessively favorable perspective taken by earlier work, and some of the literature (see e.g. the compilation by Davenport and Davenport, 1981) was produced by

human service providers whose primary focus was on helping communities and individuals cope with, rather than carefully documenting, any social problems that may have been created.

(3) Doubting the Disruptions. If the second era can be seen as representing in part a reaction against the first, the third and most recent era, extending roughly 1982-present, can be seen as a reaction against the second. The "critical review" by Wilkinson et al. (1982) can be said to mark the ending of the second period and the beginning of the third. While this review has been the focus of considerable criticism itself (see e.g. Albrecht, 1982; Finsterbusch, 1982; Freudenburg, 1982b; Gale, 1982; Gold, 1982; Murdock and Leistritz, 1982), there was clearly merit in the review's contention that much of the literature on the so-called "boomtown disruption hypothesis" showed a too-easy acceptance of assertions about the presumably negative consequences of rapid community growth. The Wilkinson et al. review has been followed, moreover, by additional empirical analyses suggesting an absence of other evidence of social problems, particularly with respect to crime (see especially Wilkinson et al., 1984; Krannich et al., 1985). On the other hand, there is a clear possibility that, just as papers of the second era may have represented an overreaction against the methodological problems and weaknesses of the first era, some of the work during this third or current era could reflect an overreaction against the problems of the second.

(4) An Era of Science? While it may be that science is not immune from the types of trends found elsewhere in society, it may also be that it is possible for scientists to deal more even-handedly with situations that rarely present simple or black/white dichotomies. It is the central contention of this paper, in fact, that the time has now come for a fourth era--for empirical research on rapid community growth that seeks to provide a balanced and com-

prehensive assessment of community change phenomena, recognizing that those phenomena are considerable more complex than would be suggested by relatively simplistic analyses of either the presumed benefits or presumed drawbacks of rapid growth. A schematic representation of the cycles of the past and the potential for greater scientific neutrality in the future--ending the cycle of what might be called "overreaction against overreaction"--is presented in Figure 1.

FIGURE 1 ABOUT HERE

Literature that performs a "debunking" function is surely part of the proposed trend toward a more balanced, scientific approach, since as Berger (1963) reminds us, one of the central traits of the sociologist is skepticism. More is needed, however. At a minimum, there is a need for the skepticism to be applied in a balanced and even-handed fashion against competing perspectives, each of which is sufficiently explicit to suggest alternative expectations about the social implications of rapid community growth. This in turn would appear to suggest a need for what Merton (1967) called "theories of the middle range"--theoretical constructs that are sufficiently abstract to permit useful conceptualization or generalization without being so abstract as to provide little contact with the empirically observable world (for additional observations on this point, see Freudenburg, 1986a, 1986b). Accordingly, the next section of this paper will examine more closely the theoretical underpinnings of existing literature on rapid community growth and outline a newer perspective that has greater causal specificity, allowing an explicit empirical comparison of the predictive accuracy of competing theoretical perspectives.

Theoretical Underpinnings

Past work. As noted briefly above, the early (pre-1975) literature (and to a lesser extent, the more recent, post-1982 literature) tends to reflect at least a tacit acceptance of the assumptions of classical economic theories. Economic growth is valued because it is seen as extending the range and level of resources available to a community, with these resources then permitting the community to deal with serious and long-standing problems. In addition, even the social changes brought on by rapid growth have often been seen as beneficial, leading to opportunities for increased education, open-mindedness, and exposure to new ideas and ways of life (see e.g. U.S. Department of Interior et al., 1974).

By contrast, research from the second or "disruption" era tends to reflect at least a tacit acceptance of classic sociological theoretical traditions (see especially Durkheim, [1887] 1951). Rapid growth is seen as disrupting existing social ties, social control mechanisms, and other aspects of traditional Gemeinschaft-like rural social cohesion. The result, according to some authors, is a pattern of disruption, social problems and individual-level alienation somewhat similar to what Durkheim might have predicted (see e.g. Gold, 1974; Jobes, 1985).

The theoretical perspective of the third era is less easy to discern, particularly with respect to predictions about social problems. The major difference between the literature of the first and the third eras is that the later literature places greater emphasis on the linkages between the local rural community and the broader forces of industrial society. Unlike most of the international literature focusing on these "external linkages," however, most of the recent literature on rapid community growth in the U.S. tends not to take a critical perspective, emphasizing instead that an increase in external or

extra-local linkages could prove to be beneficial in breaking down patterns of prejudice, inequality, and other undesirable characteristics that are argued to characterize many rural communities (see especially Wilkinson et al., 1982, 1984, but for an important counterexample, see the review and synthesis offered by Lovejoy and Krannich, 1982).

While each of these theoretical perspectives can be said to have a considerable history and a significant number of adherents, the application of these perspectives in explaining the human and social consequences of rapid community growth reveals a number of difficulties, the most important of which are related to the issue of predictive specificity. The second tradition--classic sociological theory, as represented in this case by the "boomtown disruption" literature--is perhaps the most specific of the three, in that this perspective is consistent with predictions of increased crime and other so-called "social pathologies," but even this perspective could not be said to offer high predictive specificity. The specific causal pathways through which rapid community growth is expected to lead to social problems tend only to be vaguely specified, if even that.

Yet literature from the first and third eras--drawing loosely on what are here being called "classical economic theory" and an emphasis on "extra-local linkages," respectively--lead to no consistent predictions. As noted above, researchers emphasizing extra-local linkages tend to be split between those who view the linkages as negative--that is, as being expressions of external dominance and exploitation of local resources--and those who view the linkages as positive, providing an opportunity to "free" local residents from the stultifying effects of long-established ways of life (cf. Inkeles and Smith, 1970). Neither perspective provides any significant predictive specificity about the so-called boomtown disruptions, since neither theoretical tradition points explicitly to expectations about such disruptions. Instead, researchers taking

these two perspectives tend either to dismiss the so-called disruptions as being non-existent (resulting from inaccurate local perceptions or from methodological inadequacies of existing research) or to treat any increases in disruptions as being credible but as resulting simply from increased population and/or a change in population composition. This is sometimes informally called a problem of "people pollution," with the implication that the new people are of an undesirable sort, although more formal reports are more likely to refer to problems resulting from a change in demographic composition, particularly "an increased number of single young males who commit 'more than their share' of crimes" (Milkman et al., 1980; Thompson and Kimble, 1979).

Thus, scientifically speaking, one of the greatest difficulties with all of these research traditions is that they are not able in their present form to identify the specific causal pathways by which any given pattern of the so-called boomtown disruptions might be created. As a result, they are unable to predict either beneficial or negative consequences of rapid growth except at the gross or aggregate level. Growth, in short, tends to be treated either as all good or all bad by these relatively global theoretical perspectives--a tendency, unfortunately, that fails to take account of the fact that empirical findings have been considerably more complex (Elkind-Savatsky, 1986; Flynn et al., 1983; Freudenburg, 1986a, 1986b).

Even where relatively specific predictions can be derived from the existing perspectives, moreover, these predictions are inconsistent with the accumulated evidence. The classic sociological tradition would appear to call for disruptions in most aspects of community functioning, specifically including psychosocial well-being, yet surveys have consistently failed to find evidence of psychosocial disruptions among the adult populations of rapidly growing communities (England and Albrecht, 1984; Freudenburg, 1981; Greider and Krannich, 1985; Knop, 1982; Krannich and Greider, 1984; Murdock and Lesitritz, 1979; Suzman et

al., 1980). On the other hand, the perspectives predicting an absence of disruption would argue that, where crimes do increase more than do populations, the increased crime would be due to the tendency for newcomers to be "different kinds of people" who commit crimes more often. Available studies, however, argue strongly against this "people pollution" perspective, finding instead that the increased crimes are committed by long-time residents as well as newcomers (Denver Research Institute, 1979; Dixon, 1978; Freudenburg, 1986c; Lantz and McKeown, 1979; Long, 1982; Nielsen et al, 1982; see also Bacigalupi and Freudenburg, 1983; Freudenburg et al., 1982; Murdock et al., 1985).

Future options. In sum, none of the past approaches is entirely satisfactory. Instead, there appears to be a need for perspectives that can permit greater predictive specificity--and accuracy--about the types of impacts that might be expected to be created or not be created by different forces of social change. In the case of rapid community growth, the newer and more focused theoretical perspective appearing to have the most promise is the one that takes what will be called here the "structural" perspective, which focuses on the "density of acquaintanceship."

This perspective has been presented in greater detail elsewhere (see Freudenburg, 1986c), but its basic features can be summarized briefly here. Basically, when a small and stable rural community suddenly experiences rapid growth, one of the expected consequences can be a significant decline in that community's density of acquaintanceship--in essence, the proportion of the community's members who are personally acquainted with one another.

On an a priori basis, several variables can be expected to affect a community's density of acquaintanceship. The first and most obvious is community population. In a small town, it can be physically possible for someone to know everyone else in the community, but the average New York City resident has little chance of getting to know all eight million of his or her neighors.

Community population size, however, is only the first of several relevant variables that would be expected to change in response to rapid community growth. The second is the decline in the average length of residence in the community (cf. Albrecht, 1984; Kasarda and Janowitz, 1974). All other factors being equal, the longer an individual has lived in a community, the greater will have been his or her opportunity to become acquainted with other community residents. A third and closely related variable is a decline in the average anticipated length of residence: A person who expects to remain in a community for many years will have much greater incentive to make friends locally than will someone who expects to be moving in a relatively short time.

An increase in diversity, the fourth variable, is also likely to affect residents' motivation to become acquainted. As has perhaps been pointed out most effectively by Fischer (1976, 1981, 1982), if one feels little in common with the other residents of a community--or regards them with genuine disdain--one is likely to feel less motivation to become acquainted with them. A fifth and occasionally related variable is increased segregation: If different types of people have relatively little contact with one another--whether because they live in different sections of a community, work in completely different milieux, feel antipathy for one another, or for some other reason--they are also less likely to become acquainted.

All five of these variables can be expected to change in response to rapid, large-scale community growth. Indeed, past studies of rapid community growth have reported citizen comments that "this used to be the type of town where everybody knew everybody else, but now it seems as though I hardly know anybody in town" (see the discussion in Freudenburg, 1986c). But while this newer structural perspective shares with some of the existing studies and with classic sociological theory an emphasis on the disruption of existing social organization, the similarities largely end at that point.

The density of acquaintanceship is explicitly described as a community-level social structural characteristic; it is both empirically and conceptually distinct from predictions of "atomization" or interpersonal estrangement at the individual level. Rather than predicting the "atomization" of Toennies' Gesellschaft, where "everybody is by himself and isolated" (Toennies, [1887] 1963:74), the structural perspective points to a process that might more accurately be described as "cell division," where most predevelopment patterns of "strong" (primary and quasi-primary) social ties survive largely intact. Accordingly, this perspective would not lead us to expect an endless inventory of social problems resulting from alienation, disorientation or the "undesirable" personal characteristics of any given group within the community. Patterns of disruption are also not to be expected in a global or undifferentiated sense--only in those specific areas of community social functioning where certain "informal services" formerly had been provided on the basis of the community's high density of acquaintanceship--permitted by the fact that it had been almost true, if not literally so, that "everybody knew everybody else" in the more stable community that predated the growth.

Specifically, the structural perspective argues that evidence of disruption should be visible in three areas of social functioning--socialization of the young, caring for a community's weaker members and, of most direct relevance here, the control of deviance.

In a community where virtually everyone knows "everyone else," then there will be a relatively high likelihood that if a resident sees someone entering a house, even in another section of town, the resident will know the intruder and will know whether or not he/she has any business entering the house. If the intrusion is inappropriate, the witness is likely to take corrective action--and to be able to report the intruder by name. If the density of acquaintanceship suddenly declines, however, there will be a much lower likelihood that the

witness will know either the intruder or the owner of the house, or that the witness will know whether or not the intruder has any business entering the house. Even if the intrusion does appear to be "suspicious," the witness is less likely to be willing to "get involved." Finally, if the witness does decide the intruder has no business entering the house and does take the further step of "getting involved" (at least by reporting the intruder to local police), the description is likely to be only a general one--e.g. "a white male, roughly 5'10" tall, wearing blue jeans", rather than "Ruth Johnson's nephew, Frank." Thus one of the net results of a decline in a community's density of acquaintanceship is likely to be a significant decline in the effectiveness with which the community "keeps an eye on" criminal activity and other forms of deviant behavior (cf. Little, 1977).

Unlike the classic sociological perspective, however, the structural perspective does not predict individual-level psychosocial disruptions, or at least the types of disruptions that would be expected according to classic sociological theories. As noted above, a lower density of acquaintanceship at the community level is conceptually and empirically distinct from the individual-level experience of isolation or "atomization," and indeed, there is good reason to expect that most individuals will not become more isolated from their primary group supports merely because of a drop in the community-level density of acquaintanceship (Freudenburg, 1986c). Thus to the extent that psychosocial well-being is buffered by primary-group supports rather than by the community at large, relatively little evidence of "psychological pathologies" should be expected under the structural perspective, which therefore differs in its specific expectations not only from the traditional economic logic but also from classic sociological thought.

Overall, while this newer or structural perspective is consistent with the general lack of findings on accentuated "psychopathologies" under situation of

rapid community growth, this perspective clearly calls for rapid growth to be associated with significant increases in deviant behavior. As noted above, however, several recent studies have failed to find evidence of such increases (Wilkinson et al., 1982, 1984; Krannich et al., 1985). Clearly, then, what is needed is a more comprehensive assessment of the assembled evidence. If the preponderance of the evidence indicates a lack of significant increases in crime rates, this would provide support for the assumption, underlying the traditional economic perspective, that rapid growth is not significantly disruptive to communities. If, on the other hand, the evidence indicates a pattern of significant increases in rates of crime per population, this could be taken as suggesting the superiority of the more specific structural perspective outlined here.

FINDINGS

Particularly on first examination, unfortunately, the evidence appears to be anything but clear-cut. To date, studies of crime in energy boomtowns have produced a contradictory set of findings. Based on our examination of the literature, we believe that at least part of the reason may lie in the mixture of methods that have been used. Accordingly, in this section of the paper, we review the existing studies in terms of the methods employed. Three primary techniques can be discerned: (1) Studies of criminal statistics from a large number of counties (employing county-level data and comparing a set of growing counties against another set that have not grown as rapidly); (2) Cross-community studies employing survey data on criminal victimization; and (3) Case studies of crime statistics from specific communities experiencing rapid growth. We will turn to each of these three types of studies in turn.

(1) Studies of a broad cross-section of counties. There are two principal studies and a third, as-yet unpublished study, in this first category. The two published studies have differing strengths and weaknesses, and they reach con-

tradictory findings. The first study (Wilkinson et al., 1984) examined the effects of "recent growth" (over an eight-year period, as computed from Census estimates) on the rates of "violent crimes" in 197 nonmetropolitan counties in Arizona, Colorado, Montana, New Mexico, Utah and Wyoming. Wilkinson and his colleagues found that after controlling for roughly a dozen other variables (ranging from per capita income to the state 1970 crime rate to the percentage of recent migrants in the population) recent growth had no real effect on the violent crime rate. Neither did a dummy variable for "energy development," as measured by an increase of the least 300 workers in the exploration, development and/or production of coal, petroleum, or other fuels, and/or by construction of an electric plant with at least 300 megawatts of capacity (28 of the 197 counties were classified as having such energy development present).

The second published study was done by the Colorado Division of Criminal Justice (1981) within that state's Department of Local Affairs. Working with the State Division of Mineral and Energy Impact Assistance, the authors of this study identified eleven counties and 13 specific communities as experiencing boom growth. The study found that the "Part I" or serious crimes (homicide, forcible rape, aggravated assault, robbery, burglary, larceny-theft, and auto theft) increased 140% in the impact areas from 1970-1979, while those areas' populations were increasing by 38%. In the non-impact portions of the state, crimes increased by 54% and population increased by 23% over the same time period, with the population growth in the non-impact regions generally not being a response to energy development except for new offices and related development occurring in the Denver metropolitan region. Overall, after controlling for the differing rates of population growth, the energy-impact regions showed an increase of 74% in the Part I crime rate per 100,000 persons, while the balance of the state showed an increase of 26% per 100,000 persons, a figure roughly one-third as high.

In the third study, as yet unpublished, Wilkinson and Camaso (n.d.) examined juvenile crime rates in the state of Utah during the 1970s. Using a pooled time-series and cross-sectional design in a Generalized Least Square Analysis, Wilkinson and Camaso found that population growth was the causal factor with "the most substantial effect" of the variables considered, even after controlling for changes in the counties' economic structure and absolute population size. While this study has not yet been published and additional analyses are still being performed, the analyses to date have continued to show clear effects from rapid population growth (Wilkinson, personal communication).

(2) Case studies of criminal victimization. The second category also contains three studies, each of which provides survey data on the criminal victimization experiences of representative cross-sections of the residents of rapid growth communities. The best-known of the three is the published study by Krannich et al. (1985). Examining survey data from four communities in Utah and southwestern Wyoming, Krannich and his colleagues found that rapid community growth was associated with a high level of fear of crime, but with modest and statistically non-significant differences in reported criminal victimization, although these differences were in the "expected" direction. In the rapidly growing community of Evanston, Wyoming, 63.6% of the respondents reported no cases in which "they, members of their family, or close personal friends had been the victims of violent and[/or] property crimes (in the current community of residence) within the preceding two years" (Krannich et al., 1985:203). Comparable figures for the other three communities ranged from 67.5%-77.2%. Krannich and his colleagues conclude that their study's survey findings reinforce the findings of Brookshire and D'Arge (1980) and Wilkinson et al. (1984) that "crime variations may not be closely linked to rapid population growth" (Krannich et al., 1985:205).

The other two available studies providing survey data on victimization, however, have found contrary results. In a pair of studies in the province of Alberta, Canada, Gartrell et al. (1980) found larger differences between the rapidly growing community of Fort McMurray and a set of "pre-boom" communities nearby. In Fort McMurray, 31% of the sample reported problems with "vandalism, theft, or juveniles in general" (Gartrell et al, 1980a), whereas the comparable figures in the nearby communities of Cold Lake, Grand Centre and Bonnyville were 19.4%, 20.3% and 11.9%, respectively (Gartrell et al., 1980). The Gartrell et al. data, however, are not as clearly focused on criminal victimization experiences as the Krannich et al. data; in addition, Dr. Gartrell and his colleagues did not report significance tests on the differences, and among one specific comparison group (the "rural non-farm" residents of the pre-boom areas), the somewhat higher proportion of 24% reported similar problems.

Thus we turn to the third and most recently published study of criminal victimization. A comparison of a rapidly growing community in northwestern Colorado against three other western Colorado communities that were expecting (but not yet experiencing) such growth found statistically significant differences even after controlling for length of residence. Among long-time residents--persons who had lived in their respective communities for three years or more and who thus predated the boom in the rapid-growth community--those who lived in the rapid-growth community were significantly more likely to report having experienced criminal victimization personally. The absolute difference was greatest in the case of minor crimes (12.9% vs. 4.4%), but the proportionate difference was greatest in the case of major crimes (7.1% vs. 1.1%). In addition, the boomtown residents were roughly twice as likely to report repeated or multiple cases of criminal victimization, at 2.9% vs. 1.5%. These boomtown-control differences were all strongly significant statistically (Freudenburg, 1986c).

(3) Case studies using aggregate data. The third category is by far the largest. In searching the rapid-growth literature, we have examined three to four dozen case studies of rapid community growth, drawn largely although not exclusively from studies of energy development in the western U.S. and Canada. It is possible that we have missed other relevant studies, since the majority of the reports we considered are still unpublished, but we believe this to be a reasonably representative if not exhaustive sampling. Of this group, eighteen studies provided at least reasonably usable data on crime and/or population, providing data for twenty-two explicit crime/population comparisons in six western counties and ten specific communities experiencing energy-related development. Table 1 summarizes the data from the usable studies, and the twenty-five footnotes to the Table summarize the key methodological decisions that were necessary to permit the summary reported here.

The available studies showed great variations in the reporting of specific categories of crimes; in the interest of comparability, therefore, we decided early in our analysis to limit ourselves to the figures having the highest likelihood of comparability (and the largest and thus most stable base numbers) across studies--the "overall" figures on population changes and on the changes in crimes, arrests and/or calls for assistance, whichever happened to be available for a given community from a given study. Given that it was not possible to identify a single statistic that was available from each case study, and given as well that it is not possible to identify any single crime statistic that is clearly superior to the others, we have provided a pair of indicators of overall changes in criminal activity for those studies where two such indicators were provided. The importance of this decision can be seen by the fact that even the overall figures can show important variations within a given community over the same period of time. To take the most extreme example, the "total crime" in Gillette, Wyoming, grew by only 0.2% per year from 1980-1984, while

total arrests in the same community grew by 14.1% per year over the same period. Additionally, as noted in the footnotes to the table, it was necessary in many cases to draw population figures from different sources than from the studies that provided the crime data. Clearly, as previous critics have noted, there is room for considerable improvement in attention to significant detail in the reporting of findings.[2]

In the interest of furthering consistency and comparability, all annual growth rates have been calculated on a compound-percentage basis, thus "standardizing" for the differing number of years that are sometimes found between available population change and crime change data. In addition, the caveats in the preceding paragraph should be kept in mind in interpreting the findings. Even so, however, Table 1 does indicate a reasonably consistent pattern.

(Table 1 About Here)

In twenty of the twenty-two comparisons between changes in population and changes in crimes/arrests that are reported in Table 1, the annual (compounded) percentage increase in crimes is clearly greater than the average annual (compounded) percentage increase in population. Intriguingly, both of the exceptions (the Little, 1977, data on Page, Arizona, and the later Gillette crime figures, although not the arrest figures, from Dutton et al., 1984) come from communities that were experiencing "repeat booms." Page's growth at the time of Little's study was due to the construction of a coal-fired power plant, but the community had experienced another boom from the construction of the Glen Canyon Dam just a few years earlier. Gillette's post-1980 growth reported in Table 1 is actually much less rapid than either the oil-related growth in the early 1970s or the coal- and oil-related growth experienced in the same community in the mid-to-late 1970s. A third potential exception, which is not included in

Table 1, would be Platte County, Wyoming, where Thompson et al. (1979) found a slight decline in arrests between 1975 and 1977 (from 66-57) while the total county population was increasing from 7000-8253. In this third case, however, Thompson's crime figures apparently came just from the unincorporated areas of the county, not from the total of all criminal activity. If one includes the crime as well as the population figures for the community of Wheatland, Wyoming (which represents roughly half of Platte County's population), the overall number of arrest would have increased 284% (from [33+67 =] 100 to [325+59 =] 384). This would be compounded growth rate of 96% per year, a figure more than ten times as great as the increase in total (Wheatland plus unincorporated area) county population over the same time period. In fact, a comparison of the Wheatland/Platte County population figures presented by Thompson shows the unincorporated (i.e., "non-Wheatland") county population to have declined significantly (from [7000-2900 =] 4100 to [8253-7000 =] 1253) between 1975-73, rather than increasing, making this case inappropriate for inclusion in a study of community population growth. Thus, even including the ambiguous case of Gillette's "crimes," there may be only two exceptions in the entire known literature to the general conclusion that the overall increases in crimes are far greater than the overall increases in population in these rapidly growing communities, with both exceptions coming from "repeat boom" situations.

DISCUSSION AND ANALYSIS

Overall, it can be seen that the findings from empirical studies of criminal activity in rapidly growing communities present a complex and somewhat contradictory picture. Some of the complexities, however, appear to result from methodological as much as from substantive factors, a point that will be illustrated in this section of the paper. We will turn to the three categories of studies in the same order here as in the preceding section.

(1) In the case of the first category of studies, those examining aggregated crime data from a large number of counties, the two published studies come to opposite conclusions. The Colorado Division of Criminal Justice (1981) study is limited to a single state; this may be a disadvantage, in that experiences in the state of Colorado might not be representative of what might be expected in other areas. More significantly, this study does not control statistically for other factors that might help to explain the large differences between the impact and control areas of the state.

Wilkinson et al. (1984) do control for other factors, but this study has the drawback that the controls may be of the nature that would mask or understate the actual effects of community growth. First, all control variables appear to have been entered on the first "step" of a stepwise regression analysis, thus allowing growth and the "energy-relatedness" dummy variable to explain only the residual variance; second, at least one of the control variables (percentage of recent migrants in the population) would appear to have the potential to be highly correlated with the "recent rapid growth" variable (Wilkinson and his colleagues do not report the correlations in the paper). From the point of view of the structural perspective, a third problem is that the study was limited to violent crimes, which are more likely than other crimes to be committed by perpetrators known personally by the victims: "More than half of all homicides are committed by someone known to the victim . . . [and] almost half of all assaults are by acquaintances or relatives" (Paez and Shenk, 1983:15).[3] These considertions understandably do not appear to have been salient in the design of the Wilkinson et al. study, but they do lower the value of that study's findings for the purposes of this paper.

The unpublished study in this category (Wilkinson and Camaso, n.d.) focuses exclusively on juvenile crimes, rather than overall community crimes. Nevertheless, like the Wilkinson et al (1984) study, it employs a multivariate analysis,

and like the Colorado Division of Criminal Justice (1981) study, it does find a significant influence of rapid community growth on the juvenile crime rates.

While the available crime statistics from law enforcement agencies are commonly called "objective" data, they can be less reliable than the "objective" terminology might imply. The data are subject to problems that range from outright agency manipulation to simple changes or differences in record-keeping practices. Since such practices might be expected to differ more across communities than within them at different points in time, and since such variations would be expected to increase the measurement error and hence lower the observed correlations, such measurement difficulties might thus be an additional factor in the failure of the Wilkinson et al. (1984) study to explain a significant portion of the variance in crime by means of community growth factors. (To the extent to which such variability would be lower within states than across them, the state-wide crime rates included among the Wilkinson et al. "control" variables might be less subject to such attenuation problems, suggesting an additional reason for caution in accepting the results of that study's stepwise regression analysis.)

(2) In some ways, then, perhaps the survey data on criminal victimization are at least equally "objective" (Krannich et al., 1985). Even these data show apparent contradictions between the Krannich data from Utah/Southwest Wyoming on the one hand, and the Freudenburg data from Western Colorado and Gartrell data from Alberta, on the other. Although at least the Colorado and Utah study areas are in reasonably close proximity to one another--particularly by a western U.S. scale of miles--there may be enough cultural differences between predominantly Mormon persons in the rural Utah sample and the non-Mormons in the rural Colorado sample, for example, to explain the difference in findings. Additionally, the growth in Krannich's community of Evanston was caused by oil development, while the growth in the Colorado community was caused by construction of a

coal-fired power plant. Methodological differences, however, may provide a stronger and simpler explanation. These differences may not have been significant in the initial design of the Krannich, et. al. instrument, which was intended to provide a relatively global indicator of respondents' awareness of criminal behaviors in their communities (Krannich, personal communication), but they could prove to be particularly important in studies of rapid community growth. At least four of the differences would be expected to have the result of moving the Krannich findings toward an over-reporting of victimization in the stable communities relative to the reports from the growing community.

First and most obviously, the Krannich study appears not to have controlled for differing average lengths of residence. Respondents were asked about criminal victimization occurring within the past two years, yet almost half of the sample from rapidly growing Evanston had lived in that community for less than those two years (Krannich et al., 1985:20). Second, and perhaps equally significantly, it is a common finding in studies of criminal victimization that the victims of crimes tend to suffer from recall inaccuracies, a problem that typically becomes more severe as the time periods involved become longer (Skogan, 1981:18). Respondents in the Krannich sample were asked about incidents occurring over the past two years, while those in the Freudenburg sample were asked about incidents in the previous one year.

In the present context, perhaps the most dangerous recall inaccuracy is the phenomenon known as "telescoping," particularly the tendency to report crimes as having occurred more recently than was actually the case. The National Crime Survey of the U.S. Law Enforcement Assistance Administration, for example, asked people about criminal victimization occurring in "the past six months" and then reinterviewed the same persons at six month intervals, again asking about the experiences over the previous six months. The later interviews were "bounded" by respondents' experiences of having been interviewed on the same subject at

the beginning of the recall periods. "In every case, the new, unbounded households entering the survey reported more instances of victimization than those [that] were already part of the sample used for estimation purposes; in the aggregate, the difference in rates was about 33%, a very substantial discrepancy attributable to the single methodological difference" (Skogan, 1981:20; see also Woltman, et. al., 1975; Garofalo and Hindelang, 1977). The telescoping phenomenon would be likely to exacerbate the relative over-reporting of victimization in stable communities, since respondents moving to the rapidly growing community would have their experiences "bounded" by having moved to the community and being able to remember whether a given incident occurred in their current or previous community of residence. The residents in the stable communities would have no such bounding and would be expected to display the same type of over-reporting of victimization found in national studies.

Third, respondents in the Krannich sample were asked whether they or their families and friends had experienced criminal victimization, while the respondents in the Freudenburg sample were asked whether they personally had experienced victimization. Survey respondents tend to be far less accurate in reporting the criminal victimization experiences of other household members than of themselves; Biderman et al. (1961:45), for example, found a two-to-one discrepancy in the frequency of reports of incidence personally involving respondents and those involving other household members (see also Ennis, 1967:102). The differences would presumably be even more striking in reports of incidents experienced not only by respondents and members of their families, but also by "close personal friends" (Krannich et. al., 1985:203). Again here, moreover, the net result could be expected to be an over-reporting of crimes in a stable community relative to a rapidly growing one, since residents of rapidly growing communities tend to report knowing lower proportions of their fellow community residents than do persons in more stable communities (Freudenburg, 1986c).

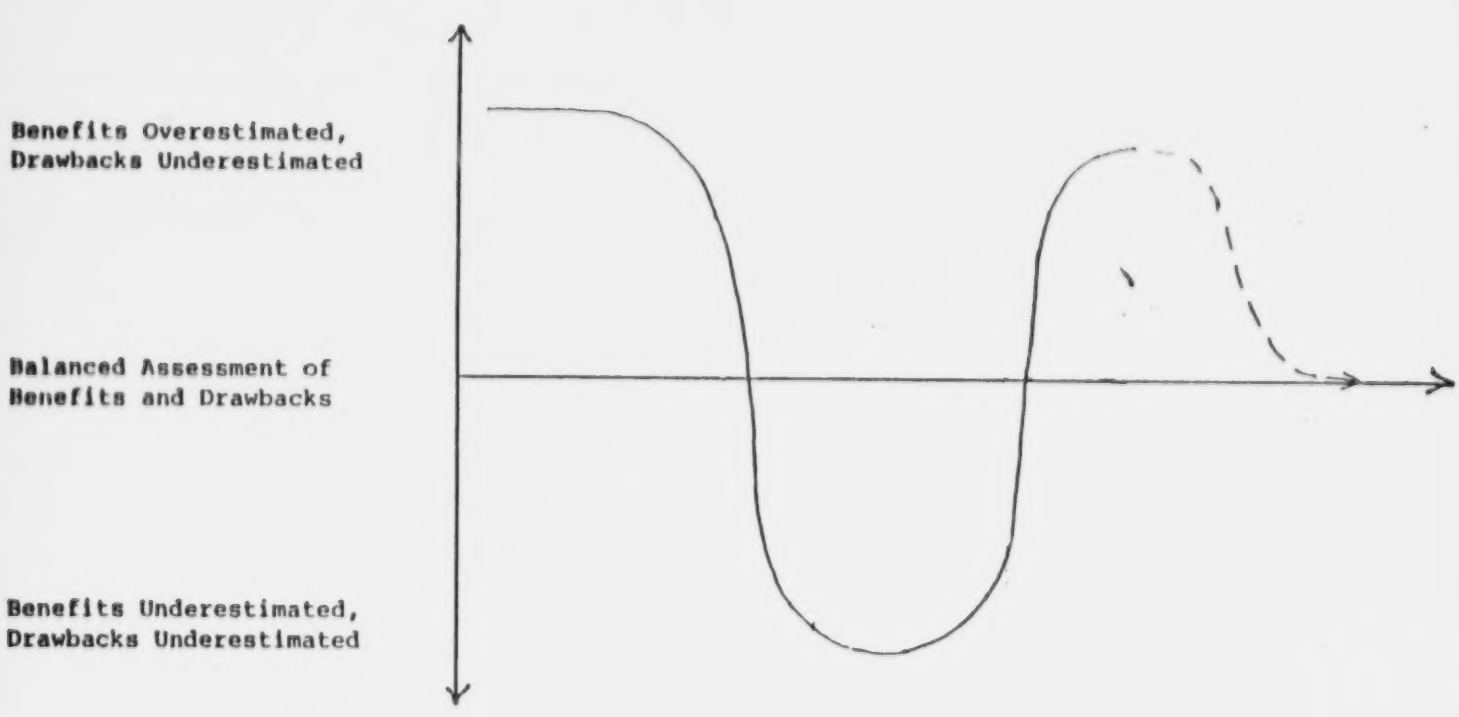
Fourth and finally, Krannich et al. interviewed self-designated "household heads" rather than a statistically representative cross section of the population. The boomtown sample in the Krannich study had both a younger median age and a significantly higher proportion of males than was the case in any of the other communities; this creates difficulties because young males tend to have a significantly higher victimization rate than those who are older or female (52% of the Evanston respondents were male, whereas males constituted less than 39% of the respondents in any of the comparison communities). When these four methodological factors are taken into consideration, they suggest that the statistical non-significance of the Krannich et al. findings (which were nevertheless in the "expected" direction) should not be taken as definitive. In fact, survey data on criminal victimization do appear to indicate higher rates of criminal activity in rapidly growing communities than in stable ones.

(3) Thus we turn to the third category of existing research, <u>case studies of crime in specific communities</u>. Perhaps in part because they are the most numerous, those case studies provide what may be the most consistent picture. While variation is of course in evidence, and while a number of available reports are lacking in needed information, the available and usable data points indicate a clear pattern of increases in crime that are considerably greater than the corresponding increases in population. Many of the specific studies need to be approached with caution, but the overall pattern is sufficiently consistent and strong to permit at least a moderate level of confidence in this conclusion.

To gain a clearer picture from the case study evidence gathered to date, we have taken the data reported in Table 1 and subjected the summary measures to a pair of additional statistical tests. The first was a simple sign test: the odds of having twenty of the twenty-two crime-to-population ratios being higher than 1.0, if in fact there were no relationship, would be less than 0.0001 (Z =

FIGURE 1:

TRENDS IN INTERPRETATIONS
OF FINDINGS ON RAPID COMMUNITY GROWTH



-3.838 by the basic formula in Champion, 1981). Thus even this simple test would lead to the clear rejection of the hypothesis (Brookshire and D'Arge, 1980; Wilkinson et al., 1984) that there is no association between increased criminal activity and rapid community growth.

In our second and perhaps more informative analysis, we provide what may be even stronger evidence, using a straightforward linear regression analysis with the available data. The findings from this analysis should be interpreted with some caution, in that the dependent variable (increase in crimes) was measured in a number of different ways in the different communities involved. The problems introduced by this fact, however, should be relatively minor so long as the differences in measurement techniques are not correlated with the independent variable (increase in population). So long as there is no correlation, the differences in measurement techniques should have only random effects on the results of the analysis. To simplify the process of searching for any potential lack of randomness, we have first rearranged the key or summary data from Table 1 in terms of the ratios between increases in crime and increases in population, and have recorded the results in Table 2. The study with the smallest increase in crime relative to the increase in population is listed at the top of Table 2, while the highest crime-to-population change ratio is summarized at the bottom. Table 2 also lists the statistical results, including the residuals, from the best-fit regression analysis. The results of the analysis are portrayed graphically in Figure 2. A simple linear regression containing all twenty-two sets of findings leads to an R^2 of .862, with the coefficient indicating an average increase in crimes that is more than 2.8 times as great as the increase in population.

While it is rare for studies in this area to explain over 85% of the variance in the data, we have nevertheless taken a series of additional steps to ensure that our findings have not been unduly influenced by a small number of

anomalous data points. First, as can been seen from Table 2, the simple average (mean) ratio of crime increases to population increases is approximately 4.6:1, a significantly higher figure than the coefficient of 2.8. Even removing the two extreme cases--McLean County, where the increase in crimes was 22 times as great as the increase in population, and the Gillette crime data, with a ratio of 0.06:1--the mean is still noticeably higher (at 3.898 versus 2.82) than the estimate produced by the regression coefficient. At a minimum, this can be taken to indicate that the regression coefficient is not excessively high. Second, we have performed an additional regression after removing the two extreme outliers recorded in Table 2 and Figure 2 -- McLean County and Page, Arizona, the residuals from which are both in the range of 100% or more. The results from this second analysis were so stunning that we have rechecked our figures to assure that the finding is not an artifact. The figures, however, appear to be accurate. With the two outliers removed, the coefficient increases slightly, indicating an increase in crimes more than three times as great as the corresponding increases in population, and the R^2 jumps substantially, indicating a nearly incredible 97.97% of the variance explained.

Third, largely because of our discomfort with findings that are so extremely clear-cut, we have performed yet another regression analysis. As can be seen from Figure 2, the crime and population figures from Valdez, Alaska (the top two points in the figure) resulted from a significantly higher rate of population growth than was found in the other cases in the analysis. Since regression results can be quite sensitive to such extreme cases, our third regression analysis removes not only the outliers but also the crime and arrest data from Valdez. The net result is that the proportion of the variance explained drops to the same general level as was found in the first regression result, with 84.8% of the variance being explained, while the coefficient increases further, indicating an increase in crimes that is 3.58 times as great as the increase in

population. Thus, even with with removal of the Valdez data points, regression analysis clearly indicates the consistency and robustness of the case study results.

The key question, of course, has to do with the magnitude of the regression coefficient rather than the size of the R^2 statistic; in this case, moreover, the question is not whether the coefficient is significantly different from zero (indicating some statistically valid effect) but whether it is significantly different from 1.0 (indicating an effect that is significantly more than proportional to the increase in population). In each of the regression analyses above, such is clearly the case. In the analysis with the highest R^2, for example, the standard error of the coefficient is .1058; conservatively choosing the .001 level of significance and a two-tailed test, a t-statistic with 19 df would be 3.883. This means that a 99.9% confidence interval for the coefficient would be $3.1198 \pm (3.883)(.1058)$, or $2.709 \leq B \leq 3.503$. Thus we can reject with a high level of confidence the hypothesis that the increase in crimes is no greater on average than the increase in populations.

Accordingly, depending on whether one's greatest level of confidence is provided by a high proportion of variance explained or by regression results that are not influenced by extreme cases, either the second or the third of these analyses could be taken as providing the best possible summary of the assembled results. In either case, however, over four-fifths of the variance is explained by a simple and straightforward regression analysis that shows an increase in crimes that is more than three times as great as the corresponding increase in community populations. As a final double-check, both of these coefficients (3.12 and 3.58) would lie between the other two "overall" estimates, being greater than the coefficient that is produced when all of the data points are included in the regression equation, but lower than the simple mean of the ratios that is reported in Table 2.

CONCLUSION

Overall, the recent tendency to conclude that boomtown crime rates are no higher than those found in comparison communities (Wilkinson et. al., 1984; Krannich et. al., 1985; Western Research Corporation, 1983) would appear to be at least intemperate--and in all likelihood, simply wrong.

Existing studies of crime and rapid community growth can be divided into three categories. First, analyses of large numbers of counties provide mixed and contradictory findings that could prove to be due, in large part, to methodological factors. Second, survey-based studies of criminal victimization, on closer examination, suggest an increase in criminal activity that is significantly more than proportional to changes in community size. Third and finally, detailed case studies of rapidly growing communities have consistently and repeatedly found increases in criminal behavior that also are far more than proportional to the increases in population. A series of regression analyses of the accumulated case study findings was found to explain 85% or more of the variance across the available studies, and to explain 98% of the variance once four outliers were removed, with the overall increase in crimes being more than three times as great, on average, as the overall increase in population.

As Wilkinson and his colleagues noted in their critical review (1982), there is a need for studies of rapid community growth to exhibit the same kind of scientific rigor that is expected for other areas of inquiry (see also Freudenburg, 1981). As Seyfrit (1986) has recently noted, however, there is a need for scientific rigor to be applied even-handedly to assertions about both the presumed benefits and the presumed drawbacks of growth.

We would also suggest the time appears to have come for a more balanced assessment of the assembled evidence--one that attempts to be as comprehensive as possible, dealing fairly with both the strengths and the weaknesses of the findings to date. Equally importantly, there is a need for theoretical frameworks

with enough predictive specificity to allow our conclusions to move away from the simplistic insistence that rapid growth must be either "all good" or "all bad."

On the basis of this paper's analysis of the assembled evidence, it appears that the changes resulting from rapid community growth can be expected with reasonable confidence to include significant increases in crimes, even after controlling for changes in population. Also on the basis of the evidence, it appears that the explanation provided by the structural perspective is superior to those provided by the perspectives employed in the past in alalyzing the social changes created by rapid community growth. It is to be hoped, however, that future work will provide a further evaluation of this and other middle-range theoretical perspectives, as part of a new trend of providing more balanced and constructive examinations of the available evidence. The time has come, in short, for assertions and overreactions to be replaced by science.

FOOTNOTES

2. Perhaps the clearest example of unscientific or at least careless reporting was provided in a relatively recent socioeconomic assessment, a technical report prepared by a well-known consulting firm for a pair of major federal agencies on one of the most significant energy developments to take place in this region since 1982. Although this report appropriately suggests reasons for caution in interpreting secondary statistics and then provides several tables on the two affected counties and the state within which they are located, nowhere does the report actually provide the population bases against which such figures would normally be compared. While the report does provide "raw counts" and rates per 1000 population for three relatively common indicators of "social disruption," moreover, straightforward calculations of the populations implied by these figures lead to estimated populations for one county in one year ranging from 3,490 to 45,471. Similar calculations for the other county for the same year lead to population estimates that range from 9,807 to 121,687. Of the ten possible comparisons of applied population figures that could be made for a given county in a given year, only two were close enough that they could be attributed, charitably, to rounding error;, only four differed from one another by less than 20%, and the modal error was more than 814%. Clearly, when straightforward calculations such as these can lead to such dramatically varying conclusions, the room for improvement is as great as the need for caution.

3. As noted above, the structural perspective would predict larger increases for crimes where anonymity would be expected to play a greater role in a perpetrator's decision to commit a crime. This--plus the fact that the most violent crimes such as murder tend to be far less frequent and hence

prone to greater stochastic variability, particularly in smaller jurisdictions--may explain one of the differences between the failure of Wilkinson et al. to find a significant association between rapid community growth and violent crime rates when the vast majority of case studies have found significant increases in the overall crime rates of affected communities.

TABLE 1
ACCUMULATED FINDINGS ON CRIMINAL VICTIMIZATION IN RAPID-GROWTH COMMUNITIES

Location: Study/Source	Years	Raw Data	Overall Change Ratio	% Change Per Year	% Change/Crime % Change/Population
COUNTY-LEVEL DATA					
CAMPBELL COUNTY, WYOMING					
Thompson (1979)					
Population	1973-77	12,300-20,500	1.7	13.6	
Total Crime (1)*	1973-77	400-946	2.4	24.0	1.8
Dutton, Masson & Stanwood (1984)					
Population (2)*	1980-85	24,367-31,900	1.3	5.5	
Total Incidents/Complaints	1980-84	4,468-7,207	1.6	12.7	2.3
Arrests	1980-84	784-1,583	2.0	19.2	3.5
FAIRBANKS (BOROUGH), ALASKA					
Dixon (1978)					
Population (3)*	1973-75	45,571-63,350	1.4	17.9	
Total Police Calls	1973-75	5,072-9,788	1.9	38.9	2.2
LINCOLN COUNTY, WYOMING					
Western Research Corporation (1983)					
Population (4)*	1979-81	11,830-13,140	1.1	5.4	
Crime (5)*	1979-81	231-408	1.8	32.9	6.1
MCLEAN COUNTY, NORTH DAKOTA					
Thompson and Kimble (1979)					
Population (6)*	1974-77	11,500-13,285	1.2	4.9	22.9
Total Arrests	1974-77	26-248	9.5	112.1	
MONTEZUMA COUNTY, COLORADO					
US Bureau of Reclamation (1985)					
Population	1979-83	15,288-21,055	1.4	8.3	
Crime (7)*	1979-83	8.2-18.3	2.2	22.2	2.7
SUBLETTE COUNTY, WYOMING					
Western Research Corporation (1983)					
Population (8)*	1979-81	4,580-4,990	1.1	4.4	9.1
Crime (9)*	1979-81	91-178	2.0	39.9	
COMMUNITY-LEVEL DATA					
CRAIG, COLORADO					
Lantz and McKeown (1978)					
Population (10)*	1973-76	5,300-8,060	1.5	14.5	
Total Crime (11)*	1973-76	462-2,274	4.9	70.1	4.8
Freudenburg (1986c)					
Population (12)*	1974-79	5,615-10,185	1.8	12.6	
Total Crime	1974-79	1,325-6,125	4.6	35.8	2.8
DELTA, UTAH					
Intermountain Power Project (1980-1985)					
Population (13)*	1980-85	1,930-5,050	2.6	21.2	
Major Crime (14)*	1980-85	19-292	15.4	72.7	3.4
EVANSTON, WYOMING					
Taft (1981)					
Population (15)*	1977-80	5,116-6,421	1.3	7.9	
Total Crime	1977-80	1,252-2,700	2.2	29.2	3.7
FAIRBANKS, ALASKA					
Fison and Quisenberry (1977)					
Population (3)*	1973-75	45,571-63,350	1.4	17.9	
Criminal Cases (16)*	1973-75	2,779-5,572	2.0	41.6	2.32
GILLETTE, WYOMING					
Campbell County Monitoring Program (1984)					
Population (17)*	1980-85	13,513-15,900	1.2	3.3	
Total Crime	1980-84	6,059-6,108	1.0	0.2	0.06
Total Arrests	1980-84	973-1,648	1.7	14.1	4.27
PAGE, ARIZONA					
Little (1977)					
Population (18)*	1970-73	1,439-7,240	5.0	71.3	
Total Crime	1970-73	395-1,372	3.5	51.4	0.7
ROCK SPRINGS, WYOMING					
Brookshire and D'Arge (1980)					
Population	1970-73	11,657-14,284	1.2	7.0	
Police Calls (19)*	1970-73	9,000-39,000	4.3	63.0	9.0
VALDEZ, ALASKA					
Baring-Gould and Bennett (1976)					
Population (20)*	1973-75	1,350-4,000		138.4	
Total Crime (21)*	1974-75	57-736		427.9	3.1
Arrests (21)*	1974-75	13-161		439.2	3.2
VERNAL, UTAH					
Deseret PG + T Impact Dept. (1984)					
Population (22)*	1980-82	6,552-7,896	1.2	8.6	
Police Calls (23)*	1980-84	182-1,117	6.1	57.4	6.7
Total Arrests (24)*	1980-84	50-108	2.2	21.2	2.5
WHEATLAND, WYOMING					
Thompson (1979)					
Population (25)*	1975-77	2,900-7,000	2.4	55.4	
Total Arrests	1975-77	33-325	9.8	213.8	3.9

*Numbers in parentheses indicate footnotes, which are found on the next page.

FOOTNOTES TO TABLE 1

(1) These are FBI Uniform Crime Reports Figures, which represent total "Part I" crimes. These include murder, non-negligent manslaughter, forcible rape, robbery, aggravated assault, larceny, theft, and motor vehicle theft. Part I crimes were only available for 1973 and for part of 1977 and 1978. The figures for 1974, 1975 and 1976 were interpolated in the original report, apparently at an average annual (compounded) rate of growth. The 1977 Total Crime figure was re-extrapolated by the authors based on the implied annual percentage change figures.

(2) The 1980 population figure was obtained from official April 1 count of the U.S. Census Bureau. The 1985 population figure was obtained from the U.S. Bureau of Land Management (1984). The 1982 Current Population Reports estimate for Campbell County for July 1 of 1982 was 32,053, but according to U.S. Bureau of Land Management, 1984, the county population may have been "considerably higher" in 1982, since "the recent recession and the current depressed state of energy production suggests more conservative projections" for the county population (U.S. Bureau of Land Management, 1984:63). We have thus used the Bureau of Land Management estimate here.

(3) The 1973 figures were prepared by Alaska State Department of Labor. The 1975 population figures are from Revenue Sharing figures used by Alaska State Department of Community and Regional Affairs. Estimates are for July 1 of each year.

(4) We have been unable to calculate reliable population figures from the data provided by Western Research Corporation (1983:3.126). That document reports a number of crimes and a calculated rate per 1,000 persons, respectively, of 231 and 23.5 in 1979, 336 and 27.6 in 1980, and 408 and 41.6 in 1981. Straightforward recalculations would show the county population therefore to be 9,830 in 1979, 12,174 in 1980 and 9,807 in 1981. These figures should be interpreted with considerable caution, however, in that similar figures provided for divorces in the same document (Western Research Corporation, 1983:3.122) would show a county population of 11,379 in 1979 and 12,280 in 1980, while identical calculations for mental health services (western Research Corporation, 1983:3.125) show populations of 112,195 and 121,687 in fiscal years 1980 and 1981 respectively. Presumably, the mental health statistics provided by the Western Research Corporation are affected by a misplacement of a decimal point, but the report provides no clues on how identical calculations on presumably comparable data, presented just a few pages apart in the same report, could lead to such widely varying total figures. Using this document's implied population changes, moreover, would have led to the conclusion that the change in crime was 329 times as great as the change in population. Accordingly, we have instead used the population figures calculated by Planning Information Corporation (1986:100).

(5) These figures are limited to "Part I" crimes, which are listed in footnote 1 of this table.

(6) The 1974 figures are from U.S. Bureau of Census, Federal State Cooperative Program for Population Estimates, p. 26. The 1977 figures are University of Wyoming estimates. They appear not to be "total" arrests in the county, but rather the arrests made by the Sheriff's Department. If so, the actual increase in arrests could have been even greater than the figure reported here.

(7) The exact crime data are not reported in the document (U.S. Bureau of Reclamation, 1985); these figures have been read as accurately as possible from graphs 1 and 2 (pg. 13). They combine "complaints handled" by the sheriff's department with the "calls for assistance" reported for the police department. The report gives no indication whether these calls/complaints are reported on a weekly, monthly, annual, or other basis; the sheriff's department complaints appear to have been relatively unaffected by the growth, averaging roughly 3.0 both in 1979 and 1983; the police department "calls for assistance" went from an estimated 5.2 in 1979 to roughly 15.3 in 1983. Thus the county totals are estimated in the table to have risen from 8.2 to 18.3 overall.

(8) We have been unable to calculate reliable population figures from the data provided by Western Research Corporation (1983:3.126). The document reports a number of crimes and a calculated rate per 1,000 persons, respectively, of 91 and 24.5 in 1979, 178 and 39.1 in 1980, and 171 and 49.9 in 1981. Straightforward recalculations would show the county population therefore to be 3,714 in 1979, 4,552 in 1980, and 3,490 in 1981. Like the Lincoln County figures, however, these implied population totals should be interpreted with considerable caution. Similar calculations from the data provided for divorces (Western Research Corporation, 1983:3.122) would show a county population of 4,429 in 1979 and 4,565 in 1980, while identical calculations for mental health services (Western Research Corporation, 1983:3.125) show populations of 45,421 and 45,471 in fiscal years 1980 and 1981 respectively. Presumably, the mental health statistics provided by the Western Research Corporation are affected by a misplacement of a decimal point, but the report provides no clues on how identical calculations on presumably comparable data, presented just a few pages apart in the same report, could lead to such widely varying total figures. Instead, we have again relied on figures provided by Planning Information Corporation (1986:100).

(9) These figures are limited to "Part I" crimes, which are listed in footnote 1 of this table.

(10) Lantz and McKeown (1979:42) report the population to have grown from 7300-10,300 between 1973 and "mid-1976," but they also report that the latter figure might underrepresent temporary workers. We have instead used the population figures calculated by Bacigalupi and Freudenburg (1983).

(11) These are total call/complaint figures, based on the average number of complaints per month reported by Lantz and McKeown, which are drawn from the months of November/December of 1973 and 1976. The average monthly figures were multiplied by 12 to arrive at the annual averages reported here.

(12) These population figures are from Bacigalupi and Freudenburg (1983).

(13) The population figures are drawn from a series of reports prepared by Paul Nelson Associates, Inc.

(14) The 1985 figures is an extrapolation based on the first two quarters of the year.

(15) Krannich et al. (1985:197) report that Evanston had a 1970 population of 4,462 and a 1980 population of 6,421, but these figures provide little information on the last few years of the decade, when the vast majority of the growth took place. The generally reliable figures from Planning Information Corporation unfortunately are not available for the period before 1980. Thus, we have turned to Maphis, Murray, Lamont Inc. (1982), who indicate total primary population in Uinta County (of which Evanston is a part) as having been 7,890 in 1971, 9,225 in 1975, and 13,628 in 1980. Thus roughly two-thirds of the population growth (64.53 percent) reported by Maphis, Murray and Lamont Inc. (1982: 5.12) took place during the five years from 1975-1980. Assuming conservatively that fully two-thirds of the population growth of Evanston reported by Krannich et al. took place during the three years of 1977-1980 (instead of the five years of 1975-1980) leads to the population figures noted here.

(16) These figures combine the felony and misdemeanor cases from the District Court and the criminal and civil cases from the Superior Court, as calculated by Fison and Quisenberry (1977:IV.15) from Alaska Court System Annual Reports. Data for 1975 are also presented, but a change in recordkeeping practices for that year destroys comparability with earlier years, and thus the 1976 data have not been used here.

(17) The 1980 population figure was obtained from the official April 1 count of the U.S. Census Bureau. The 1985 population figure was provided by U.S. Bureau of Land Management (1984:63). The Current Population Reports provide an estimate of 18,419 persons for Gillette as of July 1, 1982, but according to U.S. Bureau of Land Management, 1984, the county population may have been "considerably higher" in 1982, since "the recent recession and the current depressed state of energy production suggests more conservative projections" for the population (U.S. Bureau of Land Management, 1984:63).

(18) The 1970 population figure was an estimate, which Little obtained by using a regression technique from W. Schultze and D. Brookshire (1976).

(19) These figures were obtained from Edgley (1979).

(20) Baring-Gould and Bennett (1976:14) report that the community grew from a population base of 1350 persons in January, 1974 to the point where "the town population alone" had grown to "over 3500" by July, 1975, 1.25 years later. As noted in the next footnote, the crime figures do not include incidents from the construction camps, which maintained their own security personnel. In the interest of conservativism, however, the "over 3500" population has been calculated in these totals as being 4000 persons instead.

(21) Baring-Gould and Bennett (1986:30) present data both on criminal complaints and arrests on a month-by-month basis, but unfortunately, data from the complete "pre-boom" year of 1973 are not reported. Even so, the figures reported show some of the most dramatic increases in the literature. Criminal complaints grew from 57 in the fist half of 1974, to 250 in the second half of that year, to 330 in the first half of 1975, and to 736 in the last half of 1975. Arrests grew from 13, to 52, to 97, and then to 161, over the same four reporting periods. With increases taking place this rapidly, even minor changes in calculation methodologies can lead to dramatic changes in outcomes. Of one extreme using annual totals would lead to calculated increases of 247% and 297%, respectively, in crimes and arrests. At the other extreme, comparisons of the first month against the last month would indicate increases of 29,500% and 600%, respectively. In the figures reported here we have thus taken the intermediate step of beginning with a comparison between the data from first to the last of the half-years reported (i.e. from the first half of 1974 to the last half of 1975), which shows criminal complaints to have increased by 1,291% and arrests to have increased by 1,238%. Since there may be seasonality in the figures, we have next taken the average of the increases, calculated by comparing the first half of 1975 against the first half of 1974 and then the second half of 1975 against the second half of 1974. Thus Table 2 shows an increase in arrests of 427.9%; this is calculated as (209.6 + 646.1) / 2, meaning that the 210% increase in first half arrests and 646% increase in second-half arrests, respectively, produces the average of approximately 428% that is reported in the Table. Similarly, the increase in criminal complaints was computed as the average of the 578.9% increase in first-half complaints plus 299.4% in second-half complaints, or an average of 439.15%.

(22) The 1980 population figures was obtained from the official April 1 count of the U.S. Census Bureau. The 1982 population figure is an estimate of July 1, 1982, population as obtained from Current Population Reports; the percentage change figures are thus calculated over a period of 2.25 years.

(23) Average number of calls per month.

(24) Average number of arrests per month.

(25) The 1977 population figures is an estimate derived from Platte County figures reported by Thompson (1979). Wheatland contained 41 percent of the population of Platte County in 1970 and 58 percent of the county in 1979. From 1970-1977, a 14 percent increase was estimated for the county; the reported population figure represents 58 percent of Platte County's 1977 of 8,253.

TABLE 2
Summary of Case Study Findings
(Including Residuals from Regression Analysis)*

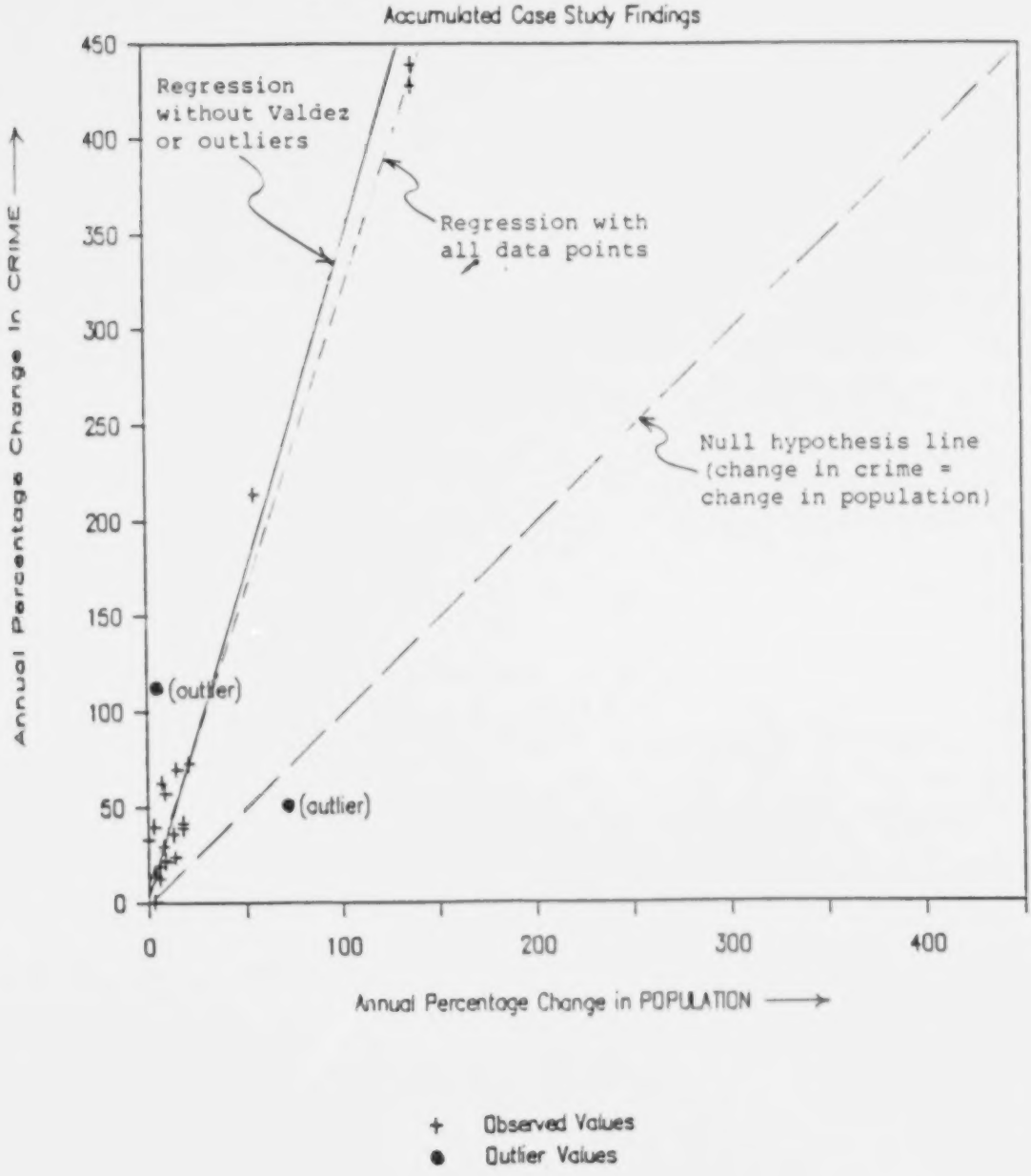
county?**		% Chg. Pop.	% Chg. Crime	RATIO:	VALUES OF RESIDUALS
	Gillette, WY, CRIME	3.3	0.2	0.06	-10.10
	Page, AZ	71.3	51.4	0.72	-171.04 (outlier)
c	Campbell Co., '79	13.6	24	1.76	-18.43
c	Fairbanks (Borough)	17.9	38.9	2.17	-16.94
c	Campbell Co., '84, CRIMES	5.5	12.7	2.31	-4.46
	Fairbanks (city)	17.9	41.6	2.32	-14.24
	Vernal, UT, ARRESTS	8.6	21.2	2.47	-5.63
c	Montezuma Co.	8.3	22.2	2.67	-3.69
	Craig, CO (Freudenburg)	12.6	35.8	2.84	-3.51
	Valdez, AK, ARRESTS	138.4	427.85	3.09	-3.93
	Valdez, AK, CRIMES	138.4	439.15	3.17	7.37
	Delta, UT	21.2	72.7	3.43	6.56
c	Campbell Co. '84, ARRESTS	5.5	19.2	3.49	2.04
	Evanston, WY	7.87	29.2	3.71	4.65
	Wheatland, WY	55.4	213.8	3.86	40.96
	Gillette, WY, ARRESTS	3.3	14.1	4.27	3.80
	Craig, CO (Lantz/McKeown)	14.5	70.1	4.83	24.86
c	Lincoln Co	5.4	32.9	6.09	16.05
	Vernal, UT, CRIMES	8.6	57.4	6.67	30.57
	Rock Springs, WY	7	63	9.00	41.16
c	Sublette Co	4.4	39.9	9.07	26.17
c	McLean Co	4.9	112.1	22.88	96.81 (outlier)
	Ave of 22 ratios:	26.085	83.609	4.587	
	Ave of 20*** ratios:	28.284	86.355	3.898	

* Analysis using the "best-fit" specification, i.e., excluding the two outliers indicated. Coefficient = 3.12, constant = 6.17, R-Square = .980

** A "c" indicates county-level, rather than community-level, data.

*** Excluding both the highest and the lowest ratios (the top and bottom lines of the Table, Lincoln County and the Gillette WY crime data).

Figure 2: Regression Results



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